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STUDY AND TREATMENT OF MENTAL HILLNESS IN CZECHOSLOVAKIA

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## FOREWORD

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## STUDY AND TREATMENT OF MENTAL ILLNESS IN CZECHOSLOVAKIA

[Following are traclations on the above subject; selected from a Czechoslovak source. Source information accompanies each article.]

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INFLUENCE OF CHLORPROMAZINE AND RESERPINE ON THE POTASSIUM QUOTIENT IN NEUROSIS

[Following is the translation of an article by Miroslav Zapletalek in Ceskoslovenska Psychiatrie (Czechoslovak Psychiatry), Vol XVII, No 1, Prague, Feb 1961, pages 11-15.]

A number of authors have concerned themselves with the study of potassium and calcium. Their findings differed according to the material and the methodology of their research. The influence and importance of both these ions for the organism is quite well known, both were discussed as to their influence on the vegetative nervous system (VNS). Already in 1923, Zondek and in 1924, Kraus and Zondek described the antagonistic function of potassium (K) and calcium (Ca) on the organism; potassium has a vagotonic influence, calcium and sympaticotonic influence. In the same year Glaser described the influence of psychic effects on the changes in the level of Ca in the blood. The dynamics of the content of Ca in the serum were followed in more detail by Ehrstrom, who concluded that the "quiet" psychic states are characterized by a lowering of the level of Ca. He further notes that the relation of sleep or a quiet, serene mood to Ca is identical. The influence of Ca in the mentally ill is mentioned also by Tomasson, who confirms the changes in Calcium in the case of the manic depressive psychoses. Glaser points to the lowering of the content of Ca in the serum being caused by hypnosis. In 1954 Dmitrieva and Kraevskij were concerned with a similar subject; they investigated K, Ca. and magnesium during sleep therapy.

One of the basic works which one can refer to while comparing discoveries is Jessner's article, where he expresses the normal values of the potassium-calcium quotient (K/Ca-Q), based on the material gleaned from research with 80 persons, and quotes as the average value 2.00 (that which is above is vagotonic, that which is below is sympaticotonic) and also a possible variation of the norm between 1.90 and 2.06. Servit also recalls this work. We also when we present comparisons, refer to these observations. Russeckij is concerned with the influence of Ca on the vegetative nervous system and introduces the influence of small portions as being sympaticometic, of larger portions as being parasympaticomimetic. Already in 1924 Bluehdorn presented a lengthy report on the success of calcium therapy. M.Montassut described in a set of neurasthenias the K/Ca-Q and the influence of both ions on emotive-

ness. I myself can certify the conspicuous fall of the quotient in the case of anxiety neuroses.

The influence of chloropromezine and reserpine on the VNS has been described by a number of authors and is commonly known: in the case of reserpine its action is explained as a central lowering of sympaticotony and a central blocking of the sympathic reflexes. The influence of chromopromazine is attributed to its effects, similar to the effects of atropine (E.B.Truit). The influence of Largactil on Ca, K, and sodium is described, along with the variability of the results, by Saco and Scarcella, but without a statistical evaluation.

In my work I took the direction in following the results of a research of K and Ca in the serum after the administration of chlorpromazine and reserpine in this way: the first day a blood sample was taken for examination of the K and Ca content before the administration of the medicine. The second day we administered 50 mg of chlorpromazine, and two hours later took another blood sample. The third or fourth day, depending on technical reasons, 0.25 mg of reserpine was administered and a blood sample was taken about three hours later. All was done under standard basic conditions.

The patients concerned were suffering from neurosia, i.e. there was no special selection according to diagnosis and symptoms, age, etc. We obtained evidence from 30 neurosis patients (13 women and 17 men) within the age span of 18 to 56 years; the average age was 32 years.

The measuring of the values of potassium and calcium in the blood serum was executed by the Central Laboratory of the KUNZ, under the direction of MUDr. Podivinsky, on the burner photocolorimeter.

After the comparison of the findings and a compilation of the data we obtained these results:

In the data taken before the administration of the drugs the values of K/Ca-Q fluctuated between 1.50 and 2.15. After the administration of chlorpromazine the quotient showed a spread of 1.17 and 2.11 and after the administration of reserpine of 1.15 to 2.35.

For a statistical evaluation (for which I thank doc.Dr.J, Siroky) two sets of data were prepared:

1. data before and after the administration of chlorpromazine,

II. data before and after the administration of reservine.

The averages of the potassium-calcium quotient in the two
sets of data show small differences (1.82; 1.80; 1.795; 1.815).

which shows that two similar series are concerned. In comparison

to Jesserer's norm all the averages show a sympaticotonic predominance.

The first set of data before the administration of the drug includes a group of 2h patients with a K/Ca-Q average of 1.82 and a decisive deviation signs 10.124. The median interval includes 71%, i.e. 17 patients and expressed thus that the set is slightly above normal and symmetrical.

In comparison with Jesserer's norm 18 (75%) patients from the set is at the level of sympaticotony, five within the boundary

between the norm and vagotony.

After the administration of 50 mg of chlorpromazine per person this group has an average K/Ca-Q value of 1.80 and sigma 20,126. From these values arises a median interval of 75%, i.e. 18 out of the 24 patients stands at the boundary of the decisive deviation. In comparison with the norm 17, i.e. 71% of the patient is on the level of sympaticotony, six are within the norm, and one within vagotomy.

As far as percentage spread is concerned the condition of the K/Ca-Q before and after administration of the drug changes only slightly and hovers more on the boundary of sympaticotony.

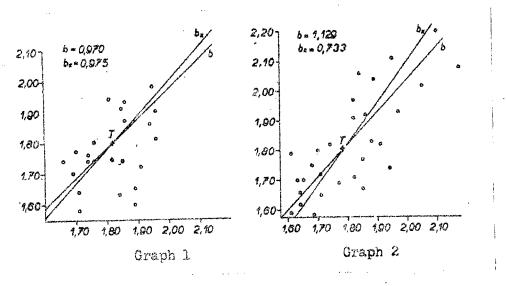
In a further evaluation we attempted to express the values of the potassium-calcium quotient from the set of data of addition of chlorpromazine in a form of regressive lines. Both are determined by so called directives, regressive coefficients b=0.970 and bx=0.975, which express the size of the angles formed by the intersecting regressive lines. In a given case this coefficient gives the uniformity of the spread of the set and a slight uniform climb of the two lines, i.e. in our case of the set concerned about the administration of chlorpromazine. The coefficient correlation(r) is 0.987, and thus nears 1. It shows that chlorpromazine influences the values of K/Ca-Q in about 98% of cases (Graph 1:)

The results after the administration of reserpine in 30 cases of neurosis are these: the set before the administration of the drug presente an arithmetical average 1.975 and sigma = 0.147 (see Table 1.) The median interval contains 22 patients, i.e. 74%. Four of the patients are below and four are above the boundary of the sigma. In comparison to Jesserer's horm 24 patients are on the sympaticotonic side, i.e. 80.5%, four are within the boundary of the norm and two are decisively vagotonic. The set itself is somewhat above the norm (see Table 2).

After the administration of the reserpine the average of the set rose to 1.815 and signs 20.170. Into the median interval fall now 22 patients, i.e. 74%, three are below and five above the median interval, i.e. in the direction of vagotony. This set shows that 20 patients are predominantly sympaticotonic, i.e. 66%,

six are normal (20%), and four are predominantly vagotonic. The set is more normal than before the administration of reserpine. In This case reserpine increases the vagotony by 1h% in comparison with the group measured without the administration of the drug.

The regressive lines prove that the sets increase uniformly. The coefficients of regression b = 1.129 and b<sub>x</sub> = 0.733 show a decrease of nearly one half. The correlational coefficient (r= 0.980) is nearly identical with that of the set dealing with the administration of chlorpromazine (Table 1 - Graph 2.).



From the decisive deviation, the coefficient of regression, and percentage evaluation we can conclude that reserpine has a somewhat wider spectrum of influence on the K/Ca-Q in the direction towards vagotony.

Within the evaluation, t does not show any statistical importance for either set (p = larger than 0.05).

Therapy	Arithmet average K/Ca-Q	a a	r	b	bx	р
	3	\$	4	5	8	7
Without chlorpromazine	1,82	± 0,124	0,987	6,970	0,975	> 0,05
Without reserpine	1,795 1,815	± 0,147 ± 0,170	0,980	1,129	0,733	> 0,05

In comparison of the results of the values of K/Ca-Q as an indicator of the vegetative tonus we cannot confirm the opinion of Donebani and Sapegne, nor of Lafon, Duc, Minvielle and Faure, that chlorpromazine in small quantities increases the inequilibrium in favor of sympathetics even when we see that in individual cases this is true. We cannot even agree with Lafon and co. who says that after reserpine the results were less intensive, but we agree with the authors in that these results lead sometimes to an increase in the tone of the vagus and a reduction of the signs of excitability through the retardation of the leading sympathetic. If we evaluate the results individually we can agree with Saco and Scarcella that the results of the values of Ca and K are individually variable, to be sure in our material being evaluated still without any diagnostic separation.

Table 2

	Therapie									
	No drug		chlorpromazin		No drug		reserpin			
	No.	%	No.	%	No.	. %	No.	.%		
1	2		3		4		5			
Sympatikotonie	18	75	17	71	24	80,5	20	60		
Normotonie	5	21	6	25	4	14	6	20		
Vagotonie	1	4	. 1	4	2	5,5	4	14		
Total	24	100	24	100	30	100	30	100		

In summary we can say that:

1. the average in each set of data does not show much difference between the two sets which shows that one is corcerned with two similar systems;

2. that the decisive deviation (3) differs relatively more after the administration of reserpine than after chlorpromazine the percentage analysis of individual cases of the vegetative tonus in the sets in comparison with the norm as set forth by Jesserer moves after reserpine more in the vagotonic direction by 14%. From the decisive deviation and the values as compared with the norm we judge that reserpine functions somewhat more in the trophotropic direction upon the vegetative nervous system than does chlorpromazine;

3. that we have found by a test of linear correlation that the coefficient of correlation is nearly the same in both sets of data and close to 1. It is, however, interesting that the regressive coefficients show in the case of the usage of chlorpromatine a nearly uniform rise or increase, while in the case of reservine they decrease in the comparison of before and after the administration of the drug by nearly one half.

From the values of the correlative coefficients we judge that both preparations influence the K/Ca-Q in neuroses in about 98% of cases (p is, however, larger than 0.05). The size of the angle of both regressive line shows that reserpine widens somewhat more the spectrum of the influence on the vegetative nervous system than does chlorpromazine and normalizes the group in that the val-

ues of K/Ca-Q rise in the trophotropic direction.

In this report we have concentrated only on the evaluation of the K/Ca-Q which does certainly supply us with a rough set of values of the tonus of the vegetative nervous system, without regard to the classification of the sets into diagnostic groups, thus syndromologically. In individual cases one can see a marked difference of values of the K/Ca-Q before and after the administration of the drug, be it chlorpromazine or reserpine. The evaluation of these results within the framework of diagnostic groups will be made possible only on the basis of a wider material. It seems that a more detailed analysis of individual ions will enable us to pinpoint the influence of chlorpromazine and reserpine on ergothropic and trophotrophic processes.

#### Summary

An analysis of the influence of Largactil and Serpasil on the potassium-calcium quotient as an indicator of the vegetative tonus was presented. The K and Ca ions were measured in a group of 30 neurotics before and after the administration of 50 mg of Largactil and 0.25 mg of Serpasil. Following statistical analysis the conclusion is drawn that both preparations affect the K/Ca-Q in about 98% of the cases, Serpasil extending somewhat more widely the spectrum of action in a trophotropic direction (11%). In neither group was statistical significance (p greater than 0.05) established.

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# SEASONAL HIRTHDAYS OF PSYCHIATRIC PATIENTS

[Following is the translation of an article by Jiri Bojanovsky and Anna Gerylovova in Cesko-slovenska Psychiatrie (Czechoslovak Psychiatry), Vol XVII, No 1, Prague, Feb 1961, pages 47-49.]

De Sauvage Nolting has called attention in a number of publications to the differentiating curve of birth within the different months in the case of schizophrenics, and similarly later in the case of oligophrenics and psychopaths. These findings were later verified and certified in Switzerland and in the United States, where Barry compared the psychiatric patients with normal population. He found, likewise, that more psychiatric patients were born during the spring months and fewer of them during the sammer months.

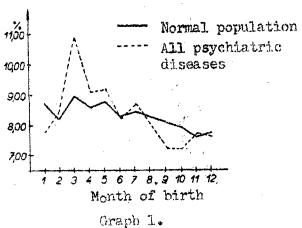
Table 1. Psychiatric patients according to months of birth and according to diagnosis (in%). P signifies the probability that the compared group does not significantly deviate from normal po-

pulation. Schizo- Manie de-Reactive Total Diagnosik Rosmal pression Month of popudepres- Neuroses diagnosis phrenia & invol. birth sion lation 7,63 7.48 10.60 5,48 4,78 7,77 I. **6.63** 10,02 9.77 8,45 8,03 II. 8,22 12.34 10.02 9,00 10.08 III. 10.90 9,05 5,44 10,74 8,05 9,49 9,02 IV. 8,62 9.31 8,74 10.60 8.88 9,20 8,82 17. 6,94 8,37 7.61 9,79 8,20 8,33 VI. 16,80 8,34 8.42 8,70 8,03 VII. 8,48 9,55 9.00 7,70 5,70 7.98 TIII. 8,36 5,01 6.68 9.51 7.21 7.59 XX. 8.13 6,21 6,43 7.88 7,21 7.37 X. 7.04 0,77 9.76 7,69 7.93 7.38 XI. 7,50 5.73 6.85 9.78 7.60 9,60 XII. 7.72 Total 100,00 100,00 100,00 100,00 100,00 100.00 1 167 322 419 6 632 781 5 173 896 Total 0,10<P 0,500 < P P. : M. Mil P<0.001 P<0.02 < 0.20< 0,70

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Because the difference in seasonal birthdates can be caused by varied influences, it is necessary for orientative elimination of these influences to submit the psychiatric patients to a simialr analysis according to the climatic and other natural conditions under which they are living.

We have decided to ascertain the importance of seasonal birthdates in mental disease research within our conditions.



In all the cases of psychiatric patients hospitalized in 1958 in ambulatory as well as non-ambulatory institutions in the Brno region, one recorded, among other things, also the month of their birth. Information from a total of 5,173 patients was collected. The patients were divided into twelve groups according to the month of their birth. All the psychiatric diseases were tabulated collectively: furthermore, some of the more numerous diagnostic groups were isolated, i.e. schizophrenia, manic depression with involutional melancholia, reactive depression, neuroses, etc., as is shown in Table 1. Individual diagnostic groups were compared (with the help of a chi quadratic test) with normal population. Information about normal population, mentioned in the second column of the table, was obtained on the basis of the data of about 6.032.781 births from the years 1920 to 1939 within the territory of the Czechoslovak Republic.

From the statistical compilation of our observations it is evident that the total group of psychiatric patients differs significantly from the normal population, and that this is most strongly marked in the case of the reactive depression and the neuroses, as can be seen from the values P in the table.

Other diagnostic groups either fail to differ from the normal population or they are numerically poorly represented in our

group of 5173 petimets. It is interesting to note that, contrary to the findings of De Sauvege Woltings, there do not seem to be any significant differences between our group of 896 schizophrenics and the normal population. This situation gives us the right te believe that even if there exist some seasonal influences of the birthdates in the case of the schizophrenics they are not much stronger than such influences among the normal population; hence such small differences could not be discovered in our group of 896 schizophrenics. (Sauvage Nolting compiled the data of 10,000 schizophrenics.)

We can say, therefore, that on the whole the greater number of the mentally ill is bern during the spring months and a smaller

number during the autumn months.

The explanation for the seasonal influences remains only hypothetical. Barry contends that similar differences in seasonal birthdates were found also in the case of anencephalia, congenital cranial osteoporosis and the open arterial duct. In the latter case an explanation has been found, namely the fact that this condition is caused by rubecla which occurs more often in the spring, and therefore more children with this defect are born during the summer and in the fall. The seasonality of the birth of illegitimate children can be explained by the increased sexual drive at certain seasons and can be compared to the seasonality in the occurence of suicide or criminal acts. Sauvage Nolting attempts to explain the case of the schizophrenics as due to the insufficient supply of vitamin C in the parents.

He finds a negative correlation with the content of vitamin C in the pregnant mothers. The role of vitamin C in the production of the desoxyribonuclein acid and therefore in the formation of chromosomes and the growth of cells, in the oxydation processes and in the formation of the mesenchymal tissue is well known. In the case of a latent predisposition towards schizophrenia, according to Sauvage Nolting, an insufficient supply of vitamin C in the parents would strenghten the constitutional succeptibility

to this disease.

In conclusion we want to emphasize that statistical findings are not as yet conclusive as to the causative relationships. They only give us a possible springboard for research in the true biological basic lews.

(We thank Eng. Sekal and Dittrochove from the Department of organizational methodology KUNZ-Brno for their help with the

technical compilation of the material.)

#### Summary

Seasonal influences of birthdates of the normal population and the mentally ill population in the Brno region were compared. The mentally ill were found to have been born more often in the spring months and less often in the autumn months.

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# ORGANIZATION OF WORK IN MENTAL INSTITUTIONS

[Following is the translation of an article by Karel Dobisek in Ceskoslovenska Psychiatrie (Czechoslovak Psychiatry), Vol XVII, No 1, Prague, Feb 1961, pages 59-60.]

The needs of diagnostics and the improvement of therapy in psychiatry, so well as the socialist order of society which provides an increasingly better care of the ill, forces us to study the organization of psychiatric services.

The organization of out-patient service is governed by those rules which commonly apply to the work of the polyclinics; similar

is the case of the bed wards in the general hospital.

The organizational incorporation of mental institutions passed several phases, but the institutions were always included in units higher than the OUNZ [Okresni Ustav Narodniho Zdravotnictvi -- District Institute of National Health. ] Only during the latest organizational changes were some of them included in the KUNZ [Krajsky Ustav Narodniho Zdravotnictvi -- Regional Institute of National Health] and others -- even large ones -- into the OUNZ. The KNV [Krajsky Narodni Vybor -- Regional National Committee | issues organizational codes for their respective KUNZ individually, as do the ONV [Okreeni Narodni Vybor -- District National Committee } for their respective OUNZ. And here originates the danger of an absence of uniformity of principles in the orgenizational codes of the institutions, if we consider as selfevident the necessity of minor differences which are influenced by local conditions. I believe, therefore, that it would be necessary to accertain as a rule in the case of all such facilities, like mental institutions, a unified code for each specific division (TEC, rheumstology, etc.) and not to leave such aspects up to the local authorities.

It is further necessary to call attention to one very important rule which was contained in the former organizational code but which could create, if included in the new code, a rather harmful effect. This rule states that the institutions should admit, generally, those cases which had been diagnostically cleared up, i.e. that the institutions would become in fact only deferment facilities of the hospital departments. Such a rule might have made sense, perhaps, in those times when the institutions lacks attending physicians, properly trained personnel as well as sufficient equipment. But in the last few years a radical change has

taken place and a number of the institutions were raised to the level of clinics, or did even overtake the hospital departments in the quality of their work as well as in the quality of equipment and therapeutical facilities. The institutions had never admitted those patients whose cases were, as a rule, diagnostically cleared had always admitted and will admit -- as long as the majority of the OUNZ will lack non-ambulatory psychiatric wards, which is not expected in the next ten years -- patients directly from the outside, even though they will, due to the complexity of their diagnostical and therapeutical facilities, admit also patients from the psychiatric wards of the hospitals for long term care. It would be paradoxical if those specialized institutions which are better equipped for their work than the majority of hespitals should be limited to long term patient care, while the hospital departments which are limited in their activity, not so much in the way of personnel, but of equipment, should hold a priviledged position. The situation is probably different in the case of the THC institutions (sanatoria) where the corresponding departments in a hospital possess all the necessary diagnostic and therapeutical facilities and where only the long time basis of cure decides about a patient's transfer to a specialized institution. In psychiatry it is, above all, the extensive specialized installations that justifies a departure from the usual procedure.

It is necessary to consider that an organizational code should take into consideration not only the existing conditions, but should anticipate also the needs of later years. It is doubtless necessary to stress in the organizational code also the fact that the medical institutions are closely related to the outside world through their physicians who work — for the time being far beyond the required hourly quota — in the outpatient clinics of the OUNZ. It is further necessary to develop the idea of a unified hospitalization in such a way that the division of specialized (in this case mental) institutions would be contained in specific districts of the general area which falls under the jurisdiction of each hospital, and that the head of each such institution should be responsible for the mental health of the population within his district.

First, several notes concerning the internal division of the mental institutions. In the old organizational code one talked about the department for quiet cases and violent chronic cases, the department of somatology, etc. Actually these were pavillions. This is evident also from the fact that several such departments were headed by one head physician. In my article, I understand under the heading of department a true primariat (as

are called those hospital departments which have their own independent head physician), which contains several wards. In one pavillion there can thus, be depending on its size, either one ward, several wards or the entire department or primariat.

The former organization of mental institutions was such that patients with a specific set of symptoms were collected in one ward, called, for example, the ward for the quiet patients, ward for the chronics, etc. Even the large institutions lacked primeriats. Thus, for example, the mental institution in Opava had before the war three primariats, as did the mental institution in Kromeriz. That meant that the head physician had in his department 500 to 600 patients. Understandably, he was not able to handle them all, and therefore in Bohemia one installed the office of a directing head physician to whom the head physicians were responsible. This situation remained fixed during the war, but immediately thereafter it became unmaintanable because it tended to hold back the progress in the care of the mentally ill. Elementary changes took place, which depending on local conditions, led to the establishment of additional primariats of general as well as specialized care (child care wards and anti-alcoholic wards). Gradually there were established also related departments, either with beds or without (Internal medicine, neurology). The old system was, however, mostly preserved, as now many of the primariets are completely or in greater part reserved for acute cases or long term cases. We still have colonies in a number of the institutions, but with not exactly the same directives as before, we have sometic departments, but no longer under the direction of an intern. It cannot be disputed that this situation is created by the fact that the State Institute of Social Security does not have enough beds for persons suffering from psychic ills, thus for persons classified by us as chronics, who then overfill the institutions and occupy all the bads above the basic allowed funds, although they represent incurable cases which do not belong into these medical institutions. We have also those head physicians who concern themselves with incurable or long term cases, and who thus do the type of work which is not popular because it prevents them from concerning themselves with acute ailments which are diagnostically more interesting and prognostically more hopeful.

Because of this situation, some of the institutions are initiating another division of the primariates, namely to provide the head physician with a possibility to take care of patients the head physician with a possibility to take care of patients suffering from all types of adult psychic ills, from acute up to suffering term ones, and their rehabilitation. They thus preserve the system of one attending physician, i.e. the head physician

of the department, and they increase his responsibility for tidetment by preventing him from transfering some of his long-zerm patients to another primariat. At the same time there remain special departments for the treatment of mildren and adolescents, as far as the situations allow it, but even this is based on the responsibility of one attending physician. Thus one mintal institution has several primariate of general psychiatry and, if conditions werrant it, additional specialized primariats.

According to previous custom, the primariats for the acutely ill had been strictly divided into sections for men and for women, while the so-called colonies and primariats for long-term patients were mixed. Such a system of organization is now considered harmful for a further development of psychiatric care because it does not make it possible to assign to the head physician a specific area of admission in order to provide the widest possible care for the mental health of the population of such an erea. It also prevents an effective relationship of the outpatient care to hospital care, and thus insure a higher quality of outpatient care as well as insure relief for the outpatient personnel in the case of sickness or vacation absences. In the present situation, the responsibility for the mental health of the population is divided between the outpotient clinics and the hospital (bed) installations, while neither of the head physicians -- even if one had been given the function of a district specialist -has sufficient power to act within the sphere of influence of the other, except for methodical leadership. The channel which leads through the director of the UNZ is cortaily open, but is not always speedy nor effective.

It is further necessary to include in the organizational code of the mental institutions certain requirements, based on the psychiatric concept endorsed by the Collegium of the Deputy Ministers of Health in 1953, for further development. This concerns, for example, the size of the departments and wards.

These circumstances suggest that in the organizational code of mental institutions should be such that it would enable a greater and closer relationship of the institutions with the outside, and would give the head physician of the department, as a qualified specialist, greater preventive and cure facilities, thus heightening his responsibility and effectiveness.

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